

## Our prototypes

Configure once, view anywhere

CAVE (co-op with Fontys)



Immersive workstation

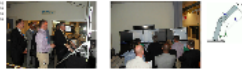


Virtual Reality glasses



## Usage

Stakeholder management/feedback



2012, DLR, Philips Best

## Virtual Reality technology

Victor Vloemans - Philips Innovation Services

VR is a technology that allows users to interact with a virtual environment. It is used in various applications, including training, simulation, and entertainment.

## five senses

Sight



Touch



Hearing

How do we hear?

Smell

How do we smell?

Taste

How do we taste?

## Future

Interaction

Movement

# Virtual Reality technology

Victor Vloemans - Philips Innovation Services

If real is what you can feel, smell, taste and see, then  
'real' is simply electrical signals interpreted by your  
brain - Morpheus

five senses

# Sight

How do we see?

# How do we see?

## 3d?

### Monocular cues

Motion parallax  
Depth from motion  
Perspective  
Relative size  
Familiar size  
Aerial perspective  
Accommodation  
Occlusion  
Curvilinear perspective  
Texture gradient  
Lighting and Shading  
Defocus blur  
Elevation

### Binocular cues

Stereopsis  
Convergence  
Shadow stereopsis

[http://en.wikipedia.org/wiki/Depth\\_perception](http://en.wikipedia.org/wiki/Depth_perception)

3d

# Monocular cues

Motion parallax  
Depth from motion  
Perspective  
Relative size  
Familiar size  
Aerial perspective  
Accommodation  
Occlusion  
Curvilinear perspective  
Texture gradient  
Lighting and Shading  
Defocus blur  
Elevation

# Binocular cues

Stereopsis  
Convergence  
Shadow stereopsis



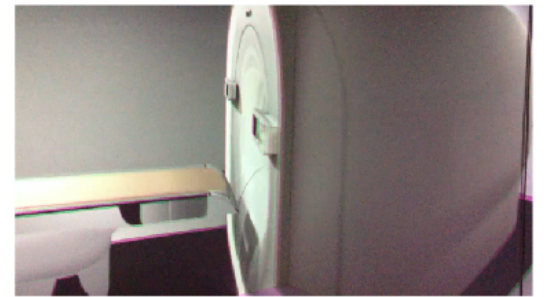
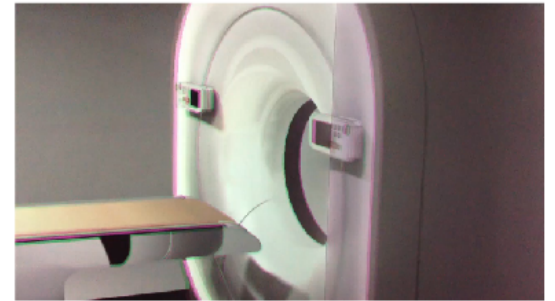
# Fake it before you make it

Screen to get basic input

3d glasses for binocular cues

head tracking for some  
monocular cues

# CAVE





Video glasses



Tablet

Touch

# Gloves

## Shape hand



Company: Measurand  
Product: Shapehand

<http://www.shapehand.com/>

## Cyber Glove



Company: Cyberglove systems  
Product: Cyberglove II, 22 sensoren voor joint metingen

<http://www.cyberglovesystems.com/products/cyberglove-ii/overview>

# Cameras

## 3d depth sensing



Company: GestureTek  
Product: Maestro 3d hand tracker

<http://www.gesturetek.com/3ddepth/introduction.php>

## Prime Sense



Company: PrimeSense  
Product: PrimeSensor

<http://www.primesense.com/?p=487>

## Depth Sense



Company: SoftKinetic  
Product: DepthSense 350

<http://www.softkinetic.com/Solutions/DepthSensecameras.aspx>

# Peripheral

3d joystick



Company: Novint  
Product: Falcon

[http://home.novint.com/index.php?option=com\\_content&view=article&id=39&Itemid=123](http://home.novint.com/index.php?option=com_content&view=article&id=39&Itemid=123)

Magnetic



Company: Butterfly haptics  
Product: Maglev 200

<http://butterflyhaptics.com/products/>

Pen



Company: Sensable  
Product: Phantom Omni

<http://www.sensable.com/haptic-phantom-omni.htm>

3d mouse



Company: 3dconnexion  
Product: Space Explorer

<http://www.3dconnexion.com/products/spaceexplorer.html>



# Hearing

Smell

Taste

# Our prototypes

Configure once, view anywhere

CAVE (co-op with Fontys)



Immersive workstation



Virtual Reality glasses



# CAVE (co-op with Fontys)



# Virtual Reality glasses



# Immersive workstation



Usage

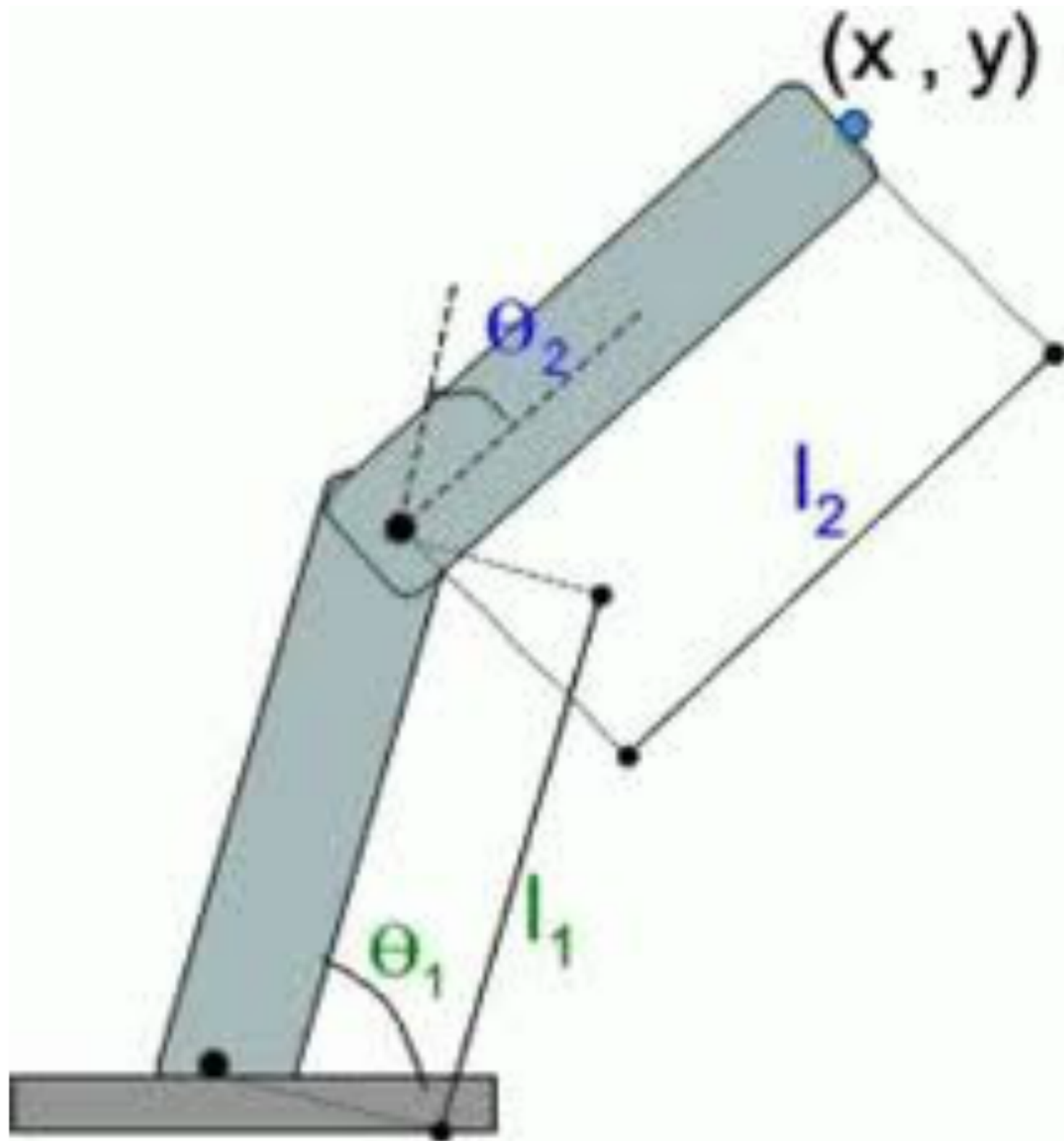


# Stakeholder management/feedback

gns  
ons  
ons  
gns



2012, iXR, Philips Best



# St

Show realistic 3d designs  
Facilitate 'What if' discussions  
Visualize design implications  
Intuitively interact with designs



Broadening the scope of evaluation given the low cost of change compared to physical prototypes.

devices

Validating the intuitiveness of use of new devices

Getting early feedback from all stakeholders,  
including the real end-users,  
based on realistic designs (3d models)  
before anything physical is built

Place new devices into their intended operating environment, early in their development cycle, in order to simulate complete workflows and identify design flaws and inter-operability issues.

# Future

Interaction

Movement